

"Amendment of the Claims before the International Bureau, as stipulated in Article 19 of the Patent Cooperation Treaty"

CLAIMS

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1. (amended) In a coil spring of closed-end type, said coil spring is characterized in that a coupler is fixedly mounted between: an outer peripheral surface of a terminal convolution of a coil element rod of the coil spring of closed-end type; and, an outer peripheral
10 surface of a subsequent convolution subsequent to said terminal convolution of the coil spring of closed-end type, so that said coupler is brought into close contact with said outer peripheral surface of each of said terminal convolution and said subsequent convolution of the coil spring of closed-end type, whereby an amount
15 of initial deflection of the coil spring of closed-end type is decreased.

2. The coil spring of closed-end type decreased in the amount of initial deflection as set forth in claim 1, wherein said coupler
20 is made of an elastic material.

"Brief Statement as stipulated in Article 19(1) of the Patent
25 Cooperation Treaty"

1. Clarified in claim 1 (amended) is a characterized feature of a coil spring of closed-end type of the present invention, in which: a coupler is brought into close contact with an outer peripheral

surface of each of a terminal convolution and a subsequent convolution of the coil spring of the present invention, wherein the subsequent convolution is subsequent to the terminal convolution, whereby any clearance does not exist between the coupler and these outer peripheral surfaces of the coil spring of closed-end type of the present invention.

In any one of coil springs disclosed in the cited references: a clearance exists between the terminal convolution and the subsequent convolution of each coil spring; and, a preliminary compression force is applied to the coil spring to preliminarily deflect the coil spring by the amount of the initial deflection of the coil spring when the coil spring is installed, so that the initial deflection is previously removed from the coil spring in installation. In any one of the cited references, there is no description as to the coil spring not provided with the clearance.

Such clearance is removed in the coil spring of the present invention by using the coupler having been brought into close contact with both of the outer peripheral surfaces of the coil spring. In operation: the coil spring of the present invention, which spring is free from any compression force and therefore has a free height, is free from the initial deflection even when compressed in a condition in which the coil spring is free from any preliminary compression force and therefore has a free height.

Further clarified in claim 1 (amended) is another characterized feature of the coil spring of closed-end type of the present invention in which: the coupler is fixedly mounted between the outer peripheral surface of the terminal convolution and the corresponding outer peripheral surface of the subsequent convolution of the coil spring. One of the cited references (which one is Japanese Utility Model

application Laid-open No. Sho 57-113739) uses a spacer for a coil spring. This spacer is mounted on the coil spring in a detachable manner to make it possible for the spacer to change the number of effective or active convolutions of the coil spring. However, this
5 cited reference does not disclose that the spacer is fixedly mounted on the coil spring.

The coupler of the coil spring of closed-end type of the present invention is characterized in that the coupler is fixedly mounted on the coil spring of closed-end type so as not to drop out of the
10 coil spring of closed-end type between its convolutions.